Food Ethics Council

Business Forum Report, March 2020

Regenerative agriculture

How should food businesses engage?

Regenerative agriculture

The rise of regenerative agriculture

The term 'regenerative agriculture' was reportedly first coined by the Rodale Institute in the 1970s, but in reality, many of the practices originate from indigenous practices in different parts of the world. There are many definitions and interpretations, but they tend to include working *with* nature and striving for positive environmental (and social) impact, rather than just 'causing a bit less harm'.

Conventional agriculture faces hurdles, particularly in the face of climate, biodiversity and obesity crises, and severe economic constraints. There is a growing movement that don't like the status quo and want instead to farm with positive impacts. Regenerative agriculture is starting to gain traction and more are calling for it to become the new normal.

But what does regenerative agriculture mean and how feasible is it? Is it best understood as a set of principles or as a menu of practices? Should food and farming businesses embrace it? If so, how?

What is regenerative agriculture?

At the heart of regenerative agriculture is the notion that a healthy plant creates a healthy soil, and vice versa. It is a cyclical process.

"Soils need a balanced diet...[1]"

Key principles of regenerative agriculture are:

1. *Keep soil covered at all times* – which cools the soil and, in parts of the world with extreme temperatures, this has a big impact on what crops can be grown

2. *Minimise soil disturbance* – reducing need for agro-chemicals and associated environmental and economic costs. Soil disturbance should be treated as a catastrophic event which disrupts its ability to function. Building stronger soil networks enables them to be more efficient at delivering nutrients to plants.

3. *Have a wide diversity of plant species* – including growing between crops, to encourage soil biodiversity

4. *Keep living roots as long as possible in the ground* – using the plant base to drive soil carbon

5. *Integrate livestock* – using nutrients from the livestock to help promote and accelerate biology and activity in the soil

These principles give rise to a diversity of regenerative practices, including no-till farming.

The basic ingredients of farming

One way of deconstructing what farmers do is that they take water, sunlight and air, turn that into carbon and then sell that in the form of crops or livestock. It was argued that this simple equation can help farmers think about which of those basic ingredients – water plus sunlight plus air – is limiting their output. Instead of 'conventional' farming, why not capture as much of these basic ingredients as are needed?

"As farmers, we take sunlight, water and air – and we turn it into carbon. We sell that carbon in the form of things like wheat[1]"

In parts of the world that are severely water-constrained e.g. Australia, no till agriculture is much more common. It was argued that thinking about **water** more carefully should help farmers in the UK increase outputs, but in a sustainable way.

The second part of the equation is **sunlight**, which is (to oversimplify) captured by plants and turned into carbon, which then goes into the soil. If fields are re-imagined as 'solar panels', capable of being powered by the sun, then cover cropping – always having a growing crop to enrich and protect the soil – surely makes a lot of sense.

"It occurred to me that we do the craziest thing as farmers. We have thousands of acres of 'solar panels', i.e. our land, our resource... But when we harvest, at a time when the sunlight is longest and strongest, we turn our entire energy production system off[1]"

The other basic ingredient is **air**, which intuitively might feel like something that farmers can not do much about. However, a key element of air is carbon dioxide (in terms of its impact, rather than the proportion of air it constitutes). More and more organisations are likely to pay for others to sequester carbon dioxide in future. Could (regenerative) agriculture offer a solution for that third ingredient?

[1] Quotes from Business Forum participants

How does it fit with other farming approaches?

In the UK, the industrialised farming model has firmly taken root. It offers the potential of producing more, often at scale. The disbenefits of farming industrially though are visible with what is happening with our wildlife and with the climate crisis.

Whilst some find the notion of regenerative agriculture empowering, others look on it differently. Converts are sometimes accused of being almost like a religion, particularly by those less open to change. Even within those that practise, or aspire to, regenerative agriculture, there are a range of approaches. One described regenerative agriculture as a 'halfway house' between organic and conventional farming, taking elements of the best from both. Conversely, some view it as going "beyond organic" – as is the case for those involved with the Regenerative Organic Certification in the USA, which uses USDA organic as a baseline. Others would position regenerative agriculture is part of a 'family' of agricultural practices trying to work in harmony with nature and produce healthy foods.

Regenerative agriculture or conservation agriculture, biodynamic farming, agroecology, organic farming – these are all so-called 'alternative' movements that have sprung up as something different to mainstream industrialised agriculture (in itself a relatively recent phenomenon). However, each has its own distinct characteristics depending on who developed it and which region of the world it came from.

Agroecology as a concept grew from where the landless movement was battling to get hold of land for farming in more ecological/ traditional ways, avoiding chemicals and larger farming systems that they were not used to. Agroecology is not just about how to farm practically on the land; it is also a social and political movement, going beyond food security to food sovereignty.

What are we farming for and what is success?

At the moment, the dominant financial and cultural measure of 'success' for farming is centred on high yields. That is unsurprising, as that is how our economic system has forced many of us to think. However, if the fundamental goal above all else is to focus on how many tonnes per hectare will grow, then what follows is that we are locked in to a heavy input way of farming. Doing that is more likely to result in unhealthier soils, which means more use of fertilisers and chemicals, which leads to a vicious spiral downwards. Writing about the productivity paradox, Professor Tim Benton and Rob Bailey wrote: "Yield growth and falling food prices have been accompanied by increasing food waste, a growing malnutrition burden and unsustainable environmental degradation."[2]. Nitrogen fertiliser 'got us out of a hole' in the past, but has had diminishing returns. It was also argued that surplus calories produced are often diverted into animal feed.

"If we want to have a step change in the UK to regenerative agriculture, we need to change the metrics that we measure farming by"

If not tonnes per hectare, then what should we aim for? That is a big but important debate in its own right. It was suggested that net margin per hectare would be a better measure – although can this incorporate the nutritional contribution? Farmers will need to be rewarded based on a number of measures of success. This may happen via public or private subsidy (e.g. via supply chain), or a combination of the two. The 'public money for public goods' approach that will replace the Common Agricultural Policy is an important step.

With a net margin focus, farmers may need to do less, need fewer tractors, fewer staff, use less fuel and are likely to have a much lower input use. It was argued that aiming for a lower fixed cost structure is vital, resulting in farming businesses that, in the long run, will be more resilient to a range of risks.

Why regenerative agriculture?

The notion of 'regenerative agriculture' sounds exciting. Some farmers want to try new ways of working, but are constrained by policy, market and economic barriers. Farmers exploring regenerative agriculture describe it as fun, but also challenging – involving often big, bold decisions and taking risks. This way of farming can be a lifestyle change too, which some will enjoy and others may not.

From a commercial perspective, there is the opportunity of developing a more resilient and sustainable business in the long-term. This might include becoming a business less dependent on

[2] Tim Benton & Rob Bailey - The paradox of productivity: agricultural productivity promotes food system inefficiency - Link here

subsidies (although under arrangements post EU transition period, will some ways of regenerative farming be rewarded via ELMS?).

Some farmers will be attracted by the greater emphasis on habitat creation and promoting biodiversity. Social aspects of regenerative farming are important too. Obesity and mental health issues can be helped by being around nature. 'Alternative' farms are generally more open to having visitors than industrialised farms – for good reason. The concept of regenerative agriculture will surely benefit from incorporating social regeneration, rather than purely environmental.

The diversity that regenerative agriculture can bring is exciting, but how can that be marketed? Is there a marketing opportunity for a regenerative agriculture brand, or would that risk adding to the confusion of the multiple schemes and labels already out there? Greater collaboration and sharing of data are important. Any new tools that are developed should ideally be aligned, harmonised and open sourced.

Practical challenges

There is typically a yield dip after two to three years when transitioning to regenerative agriculture. Farmers need to be mentally, emotionally and financially prepared for that. Focusing on net margins rather than yields can pay off, but it does involve taking your customers or clients on the journey too, which some may not be ready for.

"We lost one of our contract farming clients. The line he gave was 'I can't afford your way of farming'"

In a scenario where there was true cost accounting, then the financial models surrounding farming would look very different to what they do today.

Changing to regenerative agriculture will have huge impacts, including on everyone in farming teams, many of whom may have been farming in certain ways for years or even decades. Getting buy-in from the team can be a challenge, but is critically important.

The current tenure system in the UK does not allow for widescale transition to regenerative agriculture. A short-term farm business tenancy of three to five years is not long enough for this. It was suggested that a minimum 10-year commitment might be needed.

With livestock playing an important role in many regenerative systems, is it fair or realistic to expect arable farmers to start milking cows or having sheep? Some will relish the opportunity, but others will not want to or are not set up to do that, whilst some terrains may not suit livestock. More collaborations between farmers would help here. An arable farmer described how they bring sheep into the farm because they have cover crops and the local sheep are short of fodder early in the year, so they come into feed.

There are practical challenges relating to the infrastructure of food and farming systems, including economies of scale pressures. An example was cited of rye, where there was a good opportunity to include rye in a regenerative farmer's rotation (which would bring lots of agroecological benefits). However, after enquiries with a few UK millers, it appeared that rye being bought in the UK is coming from France because millers don't have the volume to make it worth turning their mills to rye – as under the current system, it is inefficient to do it in small batches.

The wider food systems context

A fundamental question to consider is 'What is happening to the food that is being produced under regenerative practices in Western countries'? Is it being processed? In most cases, the answer will be 'yes'. It was argued that there are only two ways of processing that will improve the nutritional value of the product once it has been harvested – namely fermenting and sprouting. The kinds of processing or preservation that maintain nutrition are freezing, drying and salting, but other methods tend to reduce the quality of what has been in grown. We can see the results of not maintaining that through-flow of nutritional value into the food we eat. Can – and should - a regenerative agriculture model function within a broader industrialised food system?

"If asking what could be done to support regenerative agriculture farms, we need to think about if/ how we can feed into large scale food systems. Or do we create different pathways to channel this kind of quality of produce into?"

Learning with others

We all learn from each other. Regenerative agriculture pioneers in the UK have learned from those in other countries who have been experimenting with regenerative agricultural practices for longer e.g. Joel Williams and Leontino Balbo Jr.

Knowledge exchange is critically important. Peer-to-peer knowledge transfer is so vital, particularly as

farmers tend to trust farmers more than anyone else. Knowledge sharing can happen in a variety of ways, including farm visits to farmers at the cutting edge, WhatsApp groups (or similar) for regenerative farmers and fora such as the Farming Forum.

There is still a gap between the scientific research community and the farmer. There is a real opportunity going forward for science and research to work with community knowledge and crowd wisdom from farmers, to drive research and new approaches forward much faster.

Mainstreaming regenerative agriculture?

It is likely that over time more will see the benefits of regenerative agriculture done well. There are some significant barriers preventing its immediate widespread uptake. Whether or not it accelerates will depend heavily on government support and incentives.

Some will worry that regenerative agriculture is a notion that risks being diluted or co-opted as it is gets more widely picked up. Should the transformative ambition that underpins this way of thinking about farming be maintained or will it need to change in order to bring more 'sheep into the regenerative agriculture fold'?

It is important to avoid turning this into (even more of) a polarised 'them' and 'us' debate, to be open-minded and to be willing to listen to different perspectives. Regenerative agriculture has the potential to open the door to a new way of seeing how ecological processes could work in more places, but it is not without its challenges.

Concluding comments

The speed with which regenerative agriculture takes off and enters the mainstream remains uncertain, but any moves to work *with* nature and to regenerate soil health and biodiversity are surely welcome. With food and farming businesses searching for ways to accelerate the shift to net zero (or beyond) and address the biodiversity and obesity crises, then surely regenerative agriculture has an important role to play.

Farming does not of course take place in isolation. It may help to think about how to shift to regenerative *food systems*, as opposed to regenerative *agriculture* that merely feeds into the rest of the industrialised food system. Regenerative agriculture is not a passing fad though – it is something that food businesses that are serious about sustainability should get their heads round quickly and explore the ways they can support its development.

What next?

Key questions to ask:

- What is blocking regenerative agriculture taking off and what might enable it to become the norm?
- Who is currently showing best practice – in the UK and internationally – that others can learn from?
- What might a road map to wider adoption of regenerative agricultural practice look like?
- How do food companies know that farms they are sourcing from are really doing 'good things' and constantly improving? How do they measure success and how *should* they?
- How can farming leaders really get behind regenerative agriculture?
- Where should the food from regenerative agriculture systems go? What does a regenerative *food* system look like?

Further resources

1. Sam Smith blog – Regenerative agriculture: a shared ambition for the supply chain? (here); Eight questions for the regenerative agriculture movement (here) and Thinking regeneratively (here)
2. Direct Driller magazine (link here)
3. Farm Gate Podcast (from FAI farms) regenerative agriculture podcasts – link here
4. Twitter list on regenerative agriculture – link here

Other relevant Business Forum reports:

- Food, farming and climate change: from culprit to champion – link here
- Food makers 2030: Who will grow and make our food in the future? – link here

This is a report of the Business Forum meeting on 10th March 2020. We are grateful to our speakers, **Ian Pigott OBE,** a farmer committed to combining conservation agriculture, education and environmental stewardship, and founder of Farmschool; **Clive Bailye**, a zero-till arable farmer from Staffordshire, founder and owner of The Farming Forum and Direct Driller Magazine, and FCCT's Soil Farmer of the Year in 2016; and **Dr Julia Wright**, Associate Professor at the Centre for Agroecology, Water and Resilience at Coventry University, specialising in quantum thinking for agroecology. **Jo Lewis**, Trustee of the Food Ethics Council, Trustee of Sustain and Strategy & Policy Director at the Soil Association, chaired the meeting. The views expressed in this report do not necessarily represent those of the Food Ethics Council, nor its members.
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